M. R. Pollock
1950 – 1951

October 1, 1951

Dr. M. R. Pollock
National Institute for Medical Research
The Ridgeway, Mill Hill
London N.W. 7, England

Dear Pollock:

This is in answer to your letter of the 11th of September. As you may possibly already have seen, the manuscript which I sent to you has in the intervening period appeared in print in the most recent issue of the "Proceedings of the National Academy of Science." Please do not hesitate to keep the manuscript since I had intended that you do so.

With respect to some of the questions which you raised, I can say the following: we have tested the effect of galactose concentrations on the rate of reversion cells in the presence of variable amounts of glucose. We have accumulated a considerable amount of data on this issue, and we can say that in the presence of 2% glucose concentrations below 0.1% galactose do not detectably affect the kinetics of reversion. Concentrations above this amount increase the number of generations required before the appearance of negatives and modify somewhat the shape of the descending portion of the curve. We have not as yet been able to perform quantitatively definitive experiments of the effect of galactose concentrations in the absence of another substrate. The reason for this is purely technical. It is, of course, difficult to maintain a fixed galactose concentration if it is the only carbohydrate source and is being used during the course of the growth of the culture. We are at the present time in the process of building a "chemostat" with the aid of which such experiments can be meaningfully performed. I think, however, that I can answer the particular question you had in mind; namely, whether perhaps small amounts of galactose in our rather complex medium might not be obscuring the results. In the first place, the quantitative nature of the reversion phenomenon is identical if the reversion is carried out in a synthetic medium. Secondly, even in our complex medium, the population level maintained during the reversion has little effect on the number of generations required for the onset of the reversion phenomenon. It might be expected that if a small amount of galactose were influencing the results, detectable divergences should be observed if a population is reverted at a level let us say of 1×10^6 per cc. as compared with 4×10^7 per cc. However, none are detected.

I hope indeed that it will be possible for us to see each other in Paris next year. In the meantime I should greatly appreciate hearing what you

and your colleagues are doing with respect to the problem of enzymatic adaptation. Much of our own present efforts are concentrated on following the transmission of the enzyme forming elements during meiosis. I think that unless unforeseen complications intervene, we shall shortly be in a position to present a satisfactory description of the transmission of enzyme forming capacity during the segregation of a heterozygote under various experimental conditions, with particular reference to the presence and absence of substrate at different concentration levels.

Sincerely yours,

S. Spiegelman

SS:os